

# Great Lakes RESTORATION

at the *National Oceanic and Atmospheric Administration*

In a world where the demand for fresh surface water increases every year, the restoration and protection of the Great Lakes is vital, as the lakes contain 20 percent of the world's and 95 percent of the U.S. fresh surface water supply. Recognizing the significance of the Great Lakes to our nation and the need for action, President Obama has made restoring the Great Lakes a national priority. Through this commitment to restoring the Great Lakes, \$475 million was invested in the region in 2010, by way of the **Great Lakes Restoration Initiative (GLRI)**. As one of 15 Federal Agencies collaborating with U.S. EPA to implement this effort, the National Oceanic and Atmospheric Administration (NOAA) was allocated \$29.72 million to help accomplish restoration goals using its ground-breaking **science**, data products and services, **prediction**, and **partnerships**.

NOAA is making significant contributions to the GLRI through each of the projects listed below. By expanding and enhancing many well-established programs, and by advancing the science in many areas that have been identified as critical to the success of the Initiative, NOAA is adhering to the GLRI principles of accountability, action, and urgency.

## 2010 Funded Projects

### Toxic Substances & Areas of Concern

- Expanded Long-term Great Lakes Contaminant Monitoring
- Modeling Atmospheric Deposition to the Great Lakes
- Lake Sturgeon Health Assessment
- Great Lakes Watershed Environmental Contamination Database Expansion

### Nearshore Health and Nonpoint Source Pollution

- Land Use Change and Agricultural Lands Indicator Development
- Developing Predictive Models to Improve Coastal and Human Health and Beach Forecasting\*
- Identifying Land Use Tipping Points that Threaten Great Lakes Ecosystems\*



### Invasive Species

- Great Lakes Aquatic Nuisance Species Information System Expansion\*
- Regional Ecosystem Prediction- Aquatic Invasive Species in the Great Lakes

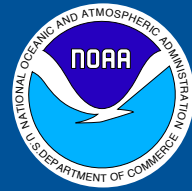
### Habitat and Wildlife Protection and Restoration

- Coastal and Estuarine Land Conservation Grant Program
- Great Lakes Habitat Restoration Grant Program

### Accountability, Education, Monitoring, Evaluation, Communication, and Partnership

- Implementation of Lakewide Management Plans
- Great Lakes Observing System Implementation and Enhancement\*
- Coordination and Prioritization of Great Lakes Climate Change Activities
  - Topographic and Bathymetric Data Inventory & Collection for the Great Lakes
  - Regional Climate Research for Application to Decision Making\*
  - Adaptation to Climate Change Support to State and Local Coastal Managers

\*GLERL Project



[www.glerl.noaa.gov](http://www.glerl.noaa.gov)

U.S. Department of Commerce

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*"We must leave the  
Great Lakes better for  
the next generation  
than the condition in  
which we inherited  
them."*

- Great Lakes  
Restoration Initiative  
Action Plan



# Great Lakes Restoration Initiative Science

## at the *Great Lakes Environmental Research Laboratory*

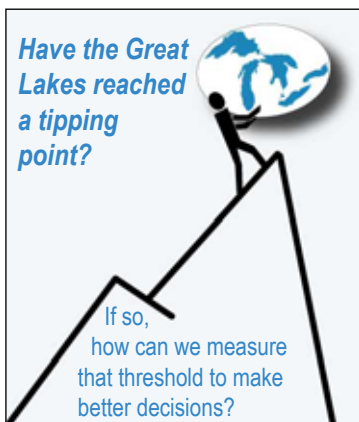
As a hub for regional science expertise, scientific products, and coordination, the Great Lakes Environmental Research Laboratory (GLERL), led by Dr. Marie Colton, is directing NOAA's implementation of the Great Lakes Restoration Initiative. In addition to administration of the effort, GLERL is conducting the following scientific research projects:

### **Nearshore Health and Nonpoint Source Pollution** **Improve Coastal Human Health and Develop Beach** **Forecasting Models**

Implement techniques for predicting water quality at beaches up to two days in advance, and forecasting the trajectory and fate of harmful algal blooms in the Great Lakes. Improve models by using remote sensing, in-lake monitoring, and confirmation of blooms, and transition these improved hydrodynamic models to an operational status.

### **Identify Land Use Tipping Points that Threaten Great Lakes** **Ecosystems and Land Use** **Change and Agricultural** **Lands Indicator Development**

Create science-based measures to assess the state of the Great Lakes ecosystem and identify tipping points in Great Lakes nearshore areas. The indicators will be used at the *State of the Lake Ecosystem Conference*, as a science-based mechanism to strengthen decision making and management in developing policies, ordinances, and land protection programs, and identify restoration priorities needed to sustain Great Lakes ecosystems.



### **Accountability, Education, Monitoring, Evaluation,** **Communication, & Partnership**

#### **The Great Lakes Observing** **System Implementation and** **Enhancement**

Provide a comprehensive near-term design for a coastal observing system that will provide data on the physical, chemical, and biological parameters necessary for the effective management of nearshore aquatic resources to support remediation, restoration, and conservation actions.



#### **Regional Climate Research** **for Application to Decision** **Making**

To determine the best course of action for decision-makers, several models have stood out in the Great Lakes region for creating a downscaled climate model. These methods include climate parameters that are unique to the Great Lakes and are important to provide answers and form conclusions about future climate scenarios. NOAA will provide the single authoritative prediction of future climate in the region to direct the focus of restoration efforts.

### **Invasive Species**

#### **Great Lakes Aquatic Nuisance Species Information System** **(GLANSIS) Database**

Expansion of the database will enhance and improve information on aquatic invaders in the Great Lakes available through GLANSIS online ([www.glerl.noaa.gov/res/Programs/glansis/glansis.html](http://www.glerl.noaa.gov/res/Programs/glansis/glansis.html)). Improvements will include the addition of range-expansion species and high-risk potential invaders that have been identified in the scientific literature and also the addition of new, simplified fact sheets. These enhancements will also improve consistency within the database with respect to the way that the impacts of each invader are described.



For more information, visit [www.glerl.noaa.gov](http://www.glerl.noaa.gov)